ORIGINAL ARTICLE

Violence Among Children and Adolescents and the Role of the Pediatrician

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Abstract. *Violence has reached epidemic proportions in the United States and has become the single most important public health problem affecting adolescent males. It is believed that violence and its subsequent morbidity and mortality have a multifactorial origin, including developmental factors, gang involvement, access to firearms, drugs, the media, poverty, and family violence. Pediatricians have a critical role in reducing violence through early identification of family violence, education and counseling to decrease well-known risk factors, and provision of nonviolent problem-solving and coping strategies to children, youth, and their families. It is essential that we initiate preventive measures now rather than be paralyzed by the weight of the crisis.*

Violence can be defined as "a threatened or actual use of physical force against a person or group that either results or is likely to result in injury or death."[1] In the United States, violence has become an epidemic. It is now a primary concern to virtually all domains of society, including the criminal justice, educational, and health care systems, religious and community groups, and the public in general. The United States' homicide rate for adolescent males 15 to 24 years old is 10 times that of any other developed country.[2] Overall, the homicide rate in the United States in 1991 was approximately 38 per 100,000.[3]

According to the National Center for Health Statistics, there are, on average, 65 homicides in the United States every day and 450

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victims, of all ages, every week. These figures translate into 2000 homicides a month and an estimated 24,500 Americans murdered every year.[4] Since 1970, the number of homicides in the United States has been increasing: in 1970, there were 16,000 murders annually; in 1993, there was an approximately 50% increase, resulting in those 24,500 homicides.[5] (See Urban Health Data, p. 151 in this issue.)

The burden of violence falls disproportionately on youth, minorities, and males. It is the single most important public health problem affecting adolescent males. Among African-American adolescents, homicide is the leading cause of death. It is the second leading cause of death among adolescents in general. Nine teenagers are murdered every day in the United States, and 60% of the 24,500 annual homicide victims are males between 15 and 34 years old. The rates are alarming for adolescent victims as well as for adolescent perpetrators. In the 1980s, high school students were responsible for 11,000 murders.[6] According to the National Crime Analysis Program at Northeastern University, the rate of murders by individuals who are over the age of 25 is beginning to decline. However, the rate of homicides committed by 14- to 24-year-olds is increasing significantly every year.[7] This increase began to occur in the mid-1980s, with the overwhelming majority of the increase attributable to a rise in the firearm-related "death rate."[1]

Homicide rates also occur disproportionately among minorities. African-American persons have a 1 in 45 lifetime risk of being the victim of a homicide; Caucasians have a 1 in 240 lifetime chance.[8] African-American males are murdered at a rate 10 times that of white males. Whereas the homicide rate for Caucasians has remained relatively constant over the last 15 years, the rate for African-American victims has increased exponentially.[4] Seventy percent of homicide victims are male. However, more 15- to 19-year-old African-American females than Caucasian males of the same age have been murder victims in recent years.[9] The majority of violent crimes occur between members of the same race: 94% of African-American victims are killed by members of their own race; 83% of Caucasian victims are killed by other Caucasians.[7]

Numerous similarities have been found between homicide victims and their perpetrators. In fact, the assailant in one incident is just as likely to be the victim in the next.[10] In a study performed in Chicago, 50% of all adolescent murder victims had a previous criminal arrest for violence. The psychological make-up of violent offenders was found to have much in common with that of their victims. These similarities included exposure to violence, hopelessness, family conflict, and poverty.[9]

Contrary to common belief, 50% of all homicides result from an argument; only 15% occur during a criminal act, such as a robbery or drug trafficking.[9] Fifty percent of all homicides occur between acquaintances, 18% between family members. Only 33% are caused by strangers.[11] Therefore, providing our youth with nonviolent means to resolve conflicts, particularly arguments with friends or family members, could reduce the homicide rate substantially.

Factors Contributing to the Risk of Violence

As is true of other high-risk conditions in adolescents, it is believed that violence and its subsequent morbidity and mortality have a multifactorial origin. This includes developmental factors, gang involvement, access to firearms, drugs, the controversial role of the media, poverty, and family violence, including risk factors associated with a tendency toward violence such as adverse parenting practices and witnessing violence.

Several hypotheses may explain why adolescents are at risk: (*a*) their separation from family; (*b*) their belief of invincibility; and (*c*) their inability to perceive a future. Erikson has identified separation from the family as a major developmental task occurring during adolescence. Such separation usually results in identification with a peer group.[12] Yet peer pressure often accompanies the support of a peer group, support that is seen as positive by most adolescents. Among certain groups there is substantial peer pressure to carry a lethal weapon. In these instances, the risk-taking behavior associated with aggressiveness and physical fighting now

can have lethal consequences. From an adolescent's perspective, retaliation may be perceived as a means of attaining fairness. In addition, the sense of invincibility felt by many adolescents places them at high risk of injury. Some have associated the often-demonstrated machismo of adolescence as part of the struggle of developing sexual identity.[13] Determining one's future role in society is another important task of adolescence. However, many impoverished youth have an overwhelming sense of hopelessness regarding their future, hopelessness that often is reinforced by failing academic performance.

The existence of gangs and the peer pressure associated with joining and remaining in a gang are risk factors for violence. Gangs provide many adolescents with a sense of belonging and purpose, and can add structure to their lives. Many adolescents become territorial and feel as if they have something to defend. Gangs also have been viewed as a possible replacement for family.[14]

Firearms play a salient role in this homicide epidemic. Firearm fatalities were responsible for more deaths among adolescents in 1990 than all medical illnesses combined; two thirds of all adolescent homicides involved a firearm.[4] While half of all American homes contain a firearm, a gun purchased for "self-defense" is 43 times more likely to be used in a murder, accident, or suicide than it is to be used in self-defense.[15] Researchers interested in the effects of firearm availability examined two demographically similar cities: Vancouver, British Columbia, and Seattle, Washington. These cities differed, however, in their access to handguns, with Vancouver having much stricter laws of availability than Seattle. There was a five-fold difference in the number of deaths caused by firearms. The number of non-handgun homicides was relatively similar, but the overall rate became disproportionate secondary to the murders caused by firearms.[16]

More than 20% of US high school students reported carrying a weapon at least once during the previous month. Many schools have placed metal detectors outside of school buildings to deter weapon carrying. Studies of these high schools showed a decrease

in the number of weapons carried inside the school; however, they found no overall decrease of weapon carrying in other places.[6]

Several aspects of drug use and drug trafficking have been found to be associated with the increase in violence. This includes the availability of highly addictive, low-cost "crack cocaine." Drug trafficking has become a source of employment for impoverished youth, and drug dealers have become new role models for them. The exact extent of involvement of drugs and its effect on aggression and violent acts is difficult to ascertain. However, several studies have shown that significant numbers of homicide victims have cocaine metabolites in their blood: from 30% of victims in a study in New York City, to 80% of victims measured by the medical examiner of Washington, DC.[9,17] Elevated blood alcohol levels have been detected in a significant number of victims.[18]

Violence in the media is much debated. Numerous studies demonstrate that repeated viewing of violence on television and in the movies encourages aggression and desensitizes individuals to acts of violence.[19] Because of the large number of hours that many youth spend watching television, violent television characters may become their new role models. This constant exposure to acts of aggression has been associated with later violent acts.[20] This exposure occurs early in childhood in the United States, with childhood exposure to television estimated to be about 20 to 30 hours per week, resulting in approximately 12,000 violent acts viewed per child per year.[21]

The effects of growing up impoverished are intensified by high unemployment, lack of social support, availability of weapons, drugs in the community, and a decreased number of positive male role models. It has been shown that racial differences in homicide rates are virtually eliminated when data are controlled for income.[22]

Ten million children witness a physical assault between their parents each year.[23] In two thirds of cases it is repeated violence.[24] In a survey of Chicago elementary school children, 25% of the inner-city school children were reported to have seen someone shot.[25] Overall, inner-city youth, particularly males, witness signif-

icantly more violence than do middle-class youth, and do so at a younger age. Children who witness or are exposed to violence often show signs of post-traumatic stress disorder. Symptoms include depression and anxiety, impaired cognitive function, and an increase in aggression and behavioral problems. Reactions vary with the severity of the violence and the physical proximity of the child as witness. The reactions also vary according to the child's developmental stage.[26] Adolescents who witness or are exposed to violence have been found to be at risk for self-destructive, acting-out behaviors, for developing a pessimistic view of the future, and for experiencing difficulty around object relations based on the belief that he or she will not reach adulthood, and therefore that relationships with others are not "safe."[27]

The issue of family violence often has been characterized by the term "cycle of violence" or "intergenerational transmission," which suggests that abused children become abusers and victims of violence become violent victimizers. Although this concept is appealing and intuitive, the alleged relationship has not been proven.[28] There is evidence that neglected and/or abused children manifest more aggressive and problematic behavior, even at early ages, and that aggressive behavior patterns set in early childhood are likely to remain thereafter.[29] However, although being maltreated as a child puts one at risk for becoming abusive, the path between these two points is far from direct or inevitable.

The Pediatrician's Role

The strongest individual predictor of violence in adolescence and adulthood is antisocial behavior (i.e., aggression, stealing, lying, dishonesty) during late childhood and early adolescence.[30,31] Because this determinant of delinquency and violence occurs in childhood, pediatricians are becoming increasingly involved with possible violence-prevention strategies. Although a single, simple, focused intervention at a specific time in life is not likely to have long-term preventive effects, and although all youth may not require such a focused intervention, or interventions may

be needed only at certain times in a youth's life, pediatricians should be alert for opportunities to counter antisocial behavior.

The pediatrician should identify family violence as early as possible in light of the determinant role of early childhood experiences. Because violence is, in large part, a learned behavior, the pediatrician should assess parents' abilities to resolve conflicts and their responses to anger. Interventions for older children and youth should include an assessment of risk factors such as fighting behavior, weapon carrying, drug abuse, and the child's or youth's ability and mechanisms to resolve conflict. The pediatrician's role also involves education and counseling to decrease these risk factors, to describe to children and youth the consequences of violence and firearms, and to teach nonviolent problem-solving and coping strategies. Follow-up also is important to support changes and provide on-going counseling.

The individual practitioner can play a significant role by focusing on individual children, adolescents, and their families. The choice of age group on which preventive strategies should be focused is controversial. Early intervention (preschool or elementary school) requires a longer intervention period, may be difficult to evaluate, and involves children who may be at the lowest immediate risk. However, such early intervention ultimately may be the most effective. Focusing interventions on older adolescents may be ineffective because of the difficulties associated with changing established attitudes and behavior patterns. Yet, this age group is at the most immediate risk.[28]

Parents, who ultimately set the example and reinforce appropriate nonviolent behavior, also must be exposed to preventive strategies. The pediatrician should emphasize appropriate parenting skills, in particular by focusing on educating parents about the age-appropriate expectations that they should have for their child. Pediatricians also should send an unequivocal message to parents about unacceptable methods of discipline, such as any form of corporal punishment. However, for this message to be successfully received, the pediatrician needs to offer examples of nonviolent ways for parents to resolve behavior and discipline problems.

The pediatrician should encourage limiting television to 1 to 2 hours per day, beginning when the child is very young. Parents should be encouraged to watch television with their children, to monitor the content, as recommended by the American Academy of Pediatrics (AAP).[32] Information about the potential injury associated with firearms in the home should be provided.[33]

The role of the pediatrician in school-based prevention programs may involve initiating conflict-resolution programs and peer-mediation programs in the community. Conflict-resolution curricula include teaching information about risk factors, discussing the role of anger and interpersonal violence, and teaching nonviolent problem-solving methods. This involves extensive role-playing and group interaction. The numerous programs that have been implemented vary in their specific curricula, the age groups targeted, and in length. Numerous evaluations of school-based prevention programs are under study; however, few have completed evaluations. To date, no randomized, controlled trials have been published; the majority of programs have used nonrandomized, controlled and uncontrolled methods to compare grades. The conflict-resolution programs usually involve 10 to 20 sessions. Most programs have administered a pre-test 1 to 2 weeks before the curriculum and a post-test 1 to 4 weeks after the curriculum, to assess knowledge, attitudes, and behavior changes.[34] The results of the conflict-resolution programs studied are varied. Some programs demonstrate short-term improvements in attitudes, problem solving, knowledge, and behavior change. However, no long-term effects have been assessed. The peer-mediation programs have more data regarding effectiveness, as schools customarily document the number of disputes. Schools using peer-mediation programs have demonstrated a decreased number of fights and an increased number of successfully mediated disputes.[34]

Levels of prevention include primary prevention, involving all children and youth; secondary prevention, targeting children and youth at high risk; and tertiary prevention, such as treatment for identified aggressors.[36] Overall, the medical profession's most effective role in the prevention of violence most likely falls within

the arena of public health initiatives. However, public health officials need to better identify violent environments for children, such as within the criminal justice system and in emergency departments, so that early preventive measures can be implemented. Medical professionals involved in public health should advocate for gun-control legislation and promote use of communications media for positive models of nonviolent conflict resolution.

Broad-based Interventions

Defining the problem, describing the demographic characteristics, and identifying risk factors for violence are the initial parts of a public health approach. Developing and evaluating interventions should follow. Study designs appropriate for these evaluations include randomized trials, controlled comparisons of populations, and case-controlled studies. Further steps in the public health approach include cost-effectiveness analyses and implementation of successful programs. This approach to violence prevention can be modeled on the successes of previous public health strategies, including anti-smoking and motor vehicle safety campaigns. Because of the scope of the problem, a "learn-as-we-go" approach needs to be adopted. We should implement preventive programs now and adjust them as they are evaluated.[1]

Broad societal issues such as poverty, joblessness, and racism must be addressed by a variety of groups within society, including public health officials. A multidisciplinary coordinated approach must include involvement of the community, the criminal justice system, the education system, and local, state, and federal governments.

The effectiveness of individual and family counseling will require evidence that changing individual risk-taking behavior can alter outcome and also that practitioners can influence attitudes and behaviors.[37] Collaboration among practitioners will be required for randomized control trials, cohort studies, and in the future, meta-analyses.

Future research is needed to determine the effectiveness of the various violence-prevention strategies. Information suggesting that neglected children may not be conceptually the same as abused children should be considered carefully. Neglected children actually may show higher levels of subsequent violent behavior than abused children. We also should be mindful that many children do not succumb to the adverse effects of abuse and neglect. It probably is very important to conduct further research about the role of these so-called "protective factors" that act against the early negative experiences that lead to violence.

There is, however, an urgent need to implement effective primary, secondary, and tertiary measures to prevent violence. It is essential to initiate this process now, rather than be paralyzed by the weight of the crisis.

References

1. Mercy JA, Rosenberg ML, Powell KE, Broome CV, Roper WL. Public health policy for preventing violence. *Health Aff.* 1993;12:7–29.
2. Fingerhut LA, Kleinmen JC. International and interstate comparisons of homicide among young males. *JAMA.* 1990;263:3292–3295.
3. World Health Organization Statistics. *World Health Statistics Annual.* Geneva, Switzerland: World Health Organization; 1991.
4. National Center for Health Statistics. Vital statistics of the United States, 1991. U.S. Department of Justice; 1991.
5. Federal Bureau of Investigation. Annual Report; 1993.
6. Violence-Related Attitudes and Behaviors of High School Students: New York City, 1992. *MMWR.* 1993;42(40):773–777.
7. McCormick J, Wingert P. Homicide. *Newsweek.* 1994, Aug 15;20–49.
8. Rosenberg ML, Mercy SA. Homicide: epidemiologic analysis at the national level. *Bull NY Acad Med.* 1986;62:376–399.
9. Prothrow-Stith D. Can physicians help curb adolescent violence? *Hosp Prac.* 1992;27:193–207.
10. Block CR. Lethal violence in the Chicago Latino community. In: Wilson AV, ed. *Homicide Dynamics of the Victim/Offender Interaction.* Cincinnati: Anderson; 1992.
11. Benedek EP, Cornell DG, eds. *Juvenile Homicide.* Washington, D.C.: American Psychiatric Press; 1989.
12. Erikson E. *Youth: Change and Challenge.* New York: Basic Books; 1963.
13. Prothrow-Stith P. *Deadly Consequences.* New York: Harper Collins; 1991.
14. Greydanus DE, Farrell EG, Sladkin K, Rypma CB. The gang phenomenon and the American teenager. *Adoles Med: State Art Rev.* 1990;1:55–70.
15. Kellerman AL, Reay DT. Protection or peril? An analysis of firearm-related deaths in the home. *New Engl J Med.* 1986;314:1557–1560.
16. Sloan JH. Handgun regulations, crime, assaults, and homicide: a tale of two cities. *New Engl J Med.* 1988;319:1256–1262.
17. Tardiff K, Marzuk PM, Leon AC, et al. Homicide in New York City: cocaine use and firearms. *JAMA.* 1994;272:43–46.

18. Cherpitel CJ. Alcohol and violence-related injuries: an emergency room study. *Addiction.* 1993;88:79–88.
19. Wood W, Wong FY, Chachere JG. Effects of media violence on viewer's aggression in unconstrained social interaction. *Psychol Bull.* 1991;109:371–383.
20. Centerwall BS. Television and violence: the scale of the problem and where to go from here. *JAMA.* 1992;267:3059–3063.
21. Kruttschnitt C, Heath L, Ward DA. Family violence, television viewing habits, and other adolescent experiences related to violent criminal behavior. *Criminology.* 1986;24:235–267.
22. Jenkins EJ, Bell CC. Adolescent violence: can it be curbed? *Adoles Med: State Art Rev.* 1992;3:71–86.
23. Gerbner G, Signoirelli N. Violence Profile 1967 Through 1988–89: *Enduring Patterns.* Philadelphia: Annenberg School for Communication; 1990.
24. Gelles RJ. *Intimate Violence.* New York: Simon and Schuster; 1988.
25. Jenkins EJ, Thompson B. Children talk about violence. Paper presented at the 19th Annual Convention of Black Psychologists, 1986; Oakland, CA.
26. Terr LC. Childhood traumas: an outline and overview. *Am J Psychiatry.* 1991;148:10–20.
27. Pynoos R, Eth S. Developmental perspectives on psychic trauma in childhood. In: Figley R, ed. *Trauma and its Wake.* New York: Brunner-Mazel; 1985.
28. Widom CS. Does violence beget violence? A critical examination of the literature. *Psychol Bull.* 1989;106:3–28.
29. Huessman R, Eron L. Cognitive processes and the persistence of aggressive behaviors. *Aggressive Behav.* 1984;10:243–251.
30. Buka S, Earls F. Early determinants of delinquency and violence. *Health Aff.* 1993;12:46–64.
31. Loeber R, Strouthamer-Loeber M. Family factors as correlates and predictors of juvenile conduct problems and delinquency. In: *Crime and Justice.* Chicago: University of Chicago Press; 1986;29–149.
32. American Academy of Pediatrics Committee on Communications. Children, adolescents, and television. *Pediatrics.* 1990;85:1119–1120.
33. American Academy of Pediatrics Committee on Injury and Poison Prevention. Firearm injuries affecting the pediatric population. *Pediatrics.* 1992;89:788.
34. Spiro A. Preventing interpersonal violence among teens: field test and evaluation. Newton, Mass. Education Development Center. 1989.
35. Yung BR, Hammond WR. The positive case for school-based violence prevention programs. *Health Aff.* 1994;13(3):170–173.
36. Slaby RG, Stringham P. Prevention of peer and community violence: the pediatrician's role. *Pediatrics.* 1994;4:608–617.
37. Gainer PS, Webster DW, Champion HR. A youth violence prevention program. *Arch Surg.* 1993;128:303–308.
38. Wilson-Brewer R, Spivak H. Violence prevention in schools and other community settings: the pediatrician as initiator, educator, collaborator, and advocate. *Pediatrics.* 1994;4:623–630.